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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,162	09/23/2003	Elena Pavlovskaja	018563-004620US	2838
46718	7590	04/14/2006	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP (018563) TWO EMBARCADERO CENTER, EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			SHARON, AYAL I	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/670,162

Applicant(s)

PAVLOVSKAIA ET AL.

Examiner

Ayal I. Sharon

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/20/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Introduction***

1. Claims 1-15 and 17-27 of U.S. Application 10/670,162, originally filed on 09/23/2003, are currently pending.
2. This application is a continuation of U.S. Application 10/241,240, now U.S. Patent 6,665,570, filed on 9/10/2002, which is a continuation of U.S. Application 09/506,419, now U.S. Patent 6,463,344, filed on 02/17/2000.
3. The amendment and terminal disclaimer filed 10/07/04 have been received and considered.
4. The Examiner of record has changed from Elliot Frank to Ayal Sharon.
5. New art rejections have been applied. This action is Non-Final.

### ***Information Disclosure Statement***

6. The information disclosure statement (IDS) submitted on 9/20/04 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the Examiner.

### ***Double Patenting***

7. The terminal disclaimer filed on 10/07/2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration

date of U.S. Patent 6,463,344 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Claim Objections***

8. Claim 17 objected to because of the following informalities: Claim 17 depends from itself (Claim 17). Appropriate correction is required. Examiner has interpreted the claim as depending from independent claim 1.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. The prior art used for these rejections is as follows:

a. U.S. Patent 5,975,893 to Chishti et al. ("**Chishti**").

11. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

- 12. Claims 1-3, 9-15, and 17-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Chishti.**

13. In regards to Claim 1, Chishti teaches the following limitations:

1. *(currently amended) A computer-implemented method for generating a computer model of one or more teeth, comprising:*

*receiving as input a digital data set of meshes representing the teeth;*

(See Chishti, especially: col.9, line 43 to col.10, line 7)

*creating inside and outside meshes by determining an intersection between a tooth mesh and a cutter mesh;*

(See Chishti, especially: col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

*compressing the digital data set; and*

(Chishti, especially: col.10, lines 52-56.)

Examiner interprets that the “parallel set of digital data set ... at a lower resolution” corresponds to the claimed “compressed digital representation.”

*displaying the compressed digital data set.*

(See Chishti, especially: col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

14. In regards to Claim 2, Chishti teaches the following limitations:

2. *(currently amended) The method of claim 1, wherein a parametric representation of the digital data set is created before compressing the data.*

(Chishti, especially: col.10, lines 52-56.)

Examiner interprets that the “parallel set of digital data set ... at a lower resolution” corresponds to the claimed “compressed digital representation.”

15. In regards to Claim 3, Chishti teaches the following limitations:

3. *(previously presented) The method of claim 1, further comprising storing the compressed data in a file.*

(Chishti, especially: col.10, lines 52-56.)

Examiner interprets that the “digital data set” corresponds to a file

16. In regards to Claim 9, Chishti teaches the following limitations:

9. *(previously presented) The method of claim 2, wherein creating a parametric representation further comprises generating a curve network.*

(See Chishti, especially: col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

Examiner interprets that the “two cubic B-spline curves” correspond to a curve network.

17. In regards to Claim 10, Chishti teaches the following limitations:

*10. (previously presented) The method of claim 9, further comprising fitting the curve network to the digital data set.*

(See Chishti, especially: col.10, lines 29-48; and col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

Examiner interprets that the “two cubic B-spline curves” correspond to a curve network.

18. In regards to Claim 11, Chishti teaches the following limitations:

*11. (previously presented) The method of claim 1, wherein receiving the digital data set comprises receiving data obtained by scanning a physical model of the teeth.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

19. In regards to Claim 12, Chishti teaches the following limitations:

*12. (previously presented) The method of claim 1, further comprising scanning a physical model of the teeth with a destructive scanning system.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

Examiner interprets that a “contact-type scanner” corresponds to the claimed “destructive scanning system.”

20. In regards to Claim 13, Chishti teaches the following limitations:

*13. (previously presented) The method of claim 12, further comprising scanning the physical model with a laser scanning system before scanning the model with the destructive scanning system.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

Examiner interprets that a “contact-type scanner” corresponds to the claimed “destructive scanning system”, and a “non-contact scanner” corresponds to a laser scanner.

21. In regards to Claim 14, Chishti teaches the following limitations:

*14. (previously presented) The method of claim 13, further comprising scanning physical models of a patient's upper and lower teeth in occlusion with the laser scanning system before scanning with the destructive scanning system.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

Examiner interprets that a "contact-type scanner" corresponds to the claimed "destructive scanning system", and a "non-contact scanner" corresponds to a laser scanner.

22. In regards to Claim 15, Chishti teaches the following limitations:

*15. (previously presented) The method of claim 1, wherein the digital data set includes volume image data of the teeth and the method includes converting the volume image data into a 3D geometric model of the tooth surfaces.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

23. In regards to Claim 17, Chishti teaches the following limitations:

*17. (currently amended) The method of claim 17, further comprising joining the inside and outside meshes to create a closed surface for each of the individual teeth.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

24. In regards to Claim 18, Chishti teaches the following limitations:

*18. (previously presented) The method of claim 1, further comprising rendering a three-dimensional (3D) graphical representation of the individual teeth.*

(See Chishti, especially: Fig.2; and col.9, line 14 to col.10, line 7)

25. In regards to Claim 19, Chishti teaches the following limitations:

*19. (previously presented) The method of claim 18, further comprising receiving an instruction from a human user to modify the graphical representation of the teeth and modifying the graphical representation in response to the instruction.*

(See Chishti, especially: col.10, lines 29-48; and col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

Examiner interprets that the “two cubic B-spline curves” correspond to a curve network.

26. In regards to Claim 20, Chishti teaches the following limitations:

20. *(previously presented) The method of claim 18, further comprising modifying the selected data set in response to the instruction from the user.*

(See Chishti, especially: col.10, lines 29-48; and col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

Examiner interprets that the “two cubic B-spline curves” correspond to a curve network.

27. In regards to Claim 21, Chishti teaches the following limitations:

21. *(previously presented) The method of claim 1, further comprising delivering data representing positions of the teeth at selected points along treatment paths to an appliance fabrication system for use in fabricating at least one orthodontic appliance structured to move the teeth toward a final position for the teeth.*

(See Chishti, especially: col.7, line 65 to col.9, line 14; and Figs.1A, 1B, and 1C)

28. In regards to Claim 22, Chishti teaches the following limitations:

22. *(currently amended) The method of claim 1, further comprising storing the compressed data set as a 3D geometric model representing visible surfaces of the corresponding tooth.*

(Chishti, especially: col.10, lines 52-56.)

Examiner interprets that the “parallel set of digital data set ... at a lower resolution” corresponds to the claimed “compressed digital representation.”

29. In regards to Claim 23, Chishti teaches the following limitations:

23. *(previously presented) The method of claim 22, further comprising modifying each 3D model to include hidden surfaces of the corresponding tooth.*

(Chishti, especially: col.10, line 48 to col.11, line 38.)



30. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

31. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

32. The prior art used for these rejections is as follows:

- a. U.S. Patent 5,975,893 to Chishti et al. ("**Chishti**").
- b. Yamani, S.M. et al. "A System for Human Jaw Modeling Using Intra-Oral Images". Proc. of the 20<sup>th</sup> Annual Conf. of the IEE Eng'g in Medicine and Biology Society. Nov.1, 1998. Vol.2, pp.563-566. ("**Yamani**").

33. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

34. **Claims 4-8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Official Notice.**

35. In regards to Claim 4, Chishti teaches the following limitations:

4. *(previously presented) The method of claim 1, further comprising transmitting the compressed data to a remote computer.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

36. In regards to Claim 5, Chishti teaches the following limitations:

5. *(previously presented) The method of claim 4, further comprising displaying the compressed data on the remote computer.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

37. In regards to Claim 6, Chishti does not expressly teach the following limitation:

6. *(previously presented) The method of claim 4, wherein the compressed data are transmitted over a network.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

38. In regards to Claim 7, Chishti teaches the following limitations:

7. *(previously presented) The method of claim 6, wherein the network is a wide area network.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a wide area network (WAN).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

39. In regards to Claim 8, Chishti teaches the following limitations:

8. *(previously presented) The method of claim 6, wherein the network is the Internet.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via the internet.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

40. In regards to Claim 18,

18. The method of claim 13, wherein rendering the graphical representation comprises downloading data to a remote computer at which a human viewer wishes to view the graphical representation.

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via the internet.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

**41. Claims 4-8 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Yamani.**

42. In regards to Claim 24, Chishti teaches the following limitations:

24. *(currently amended) A computer-implemented method for generating a computer model of one or more teeth, comprising:*

*receiving as input a digital data set of meshes representing the teeth;*

(See Chishti, especially: col.9, line 43 to col.10, line 7)

*compressing the digital data set;*

(Chishti, especially: col.10, lines 52-56.)

Examiner interprets that the "parallel set of digital data set ... at a lower resolution" corresponds to the claimed "compressed digital representation."

*displaying the computer model of the teeth using a parametric representation;*

(See Chishti, especially: col.11, line 58 – col.12, line 8; and Fig.4 and Fig.4A)

*rendering a three-dimensional (3D) graphical representation of the individual teeth; and allowing a human user to select a tooth in the graphical representation and, in response, displaying information about the tooth.*

(See Chishti, especially: col.6, lines 38-49)

However, Chishti does not expressly teach the following limitation:

*receiving an input signal from a 3D gyroscopic input device controlled by a human user and using the input signal to alter an orientation of the teeth in the graphical representation;*

Yamani, on the other hand, does expressly teach this limitation (see Yamani, Fig.4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Chishti with those of Yamani, because "such a model will be a tremendous asset in dental training and teaching." (Yamani, p.564, first para.)

43. In regards to Claim 25,

*25. (previously presented) The method of claim 24 wherein rendering the graphical representation comprises rendering the teeth at a selected one of multiple viewing orthodontic-specific viewing angles.*

Claim 25 is rejected on the same grounds as claim 24.

44. In regards to Claim 26,

*26. (previously presented) The method of claim 24, further comprising providing a user interface through which a human user can provide text-based comments after viewing the graphical representation of the teeth.*

Claim 26 is rejected on the same grounds as claim 24.

**45. Claim 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Yamani and further in view of Official Notice.**

46. In regards to Claim 27, Chishti does not expressly teaches the following limitations:

*27. (previously presented) The method of claim 24, wherein rendering the graphical representation comprises downloading data to a remote computer at which a human user wishes to view the graphical representation.*

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via the internet.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chishti with Official Notice, because doing so would facilitate the sharing of information between different computers.

### ***Response to Arguments***

47. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

### ***Correspondence Information***

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Art Unit: 2123

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Any inquiry of a general nature or relating to the status of this application  
or proceeding should be directed to the Tech Center 2100 Receptionist, whose  
telephone number is (571) 272-2100.

Ayal I. Sharon  
Art Unit 2123  
April 11, 2006

  
Paul L. Rodriguez 4/12/06  
Primary Examiner  
Art Unit 2125-2123